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D2136 D401 D404 D406 D421

(56) Documents Cited

GB 2219015 A

GB 0714263 A

GB 0237277 A

GB 0132271 A

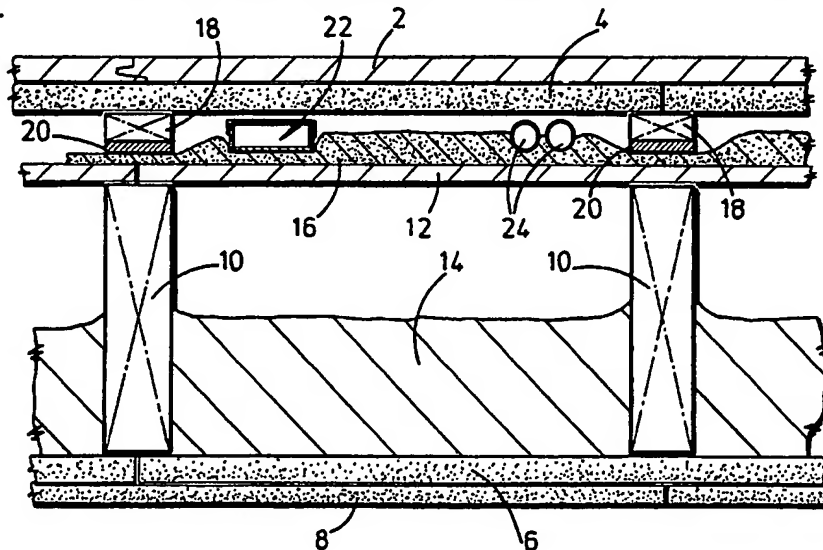
EP 0171691 A2

(58) Field of Search

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## (54) Sound-insulating flooring construction

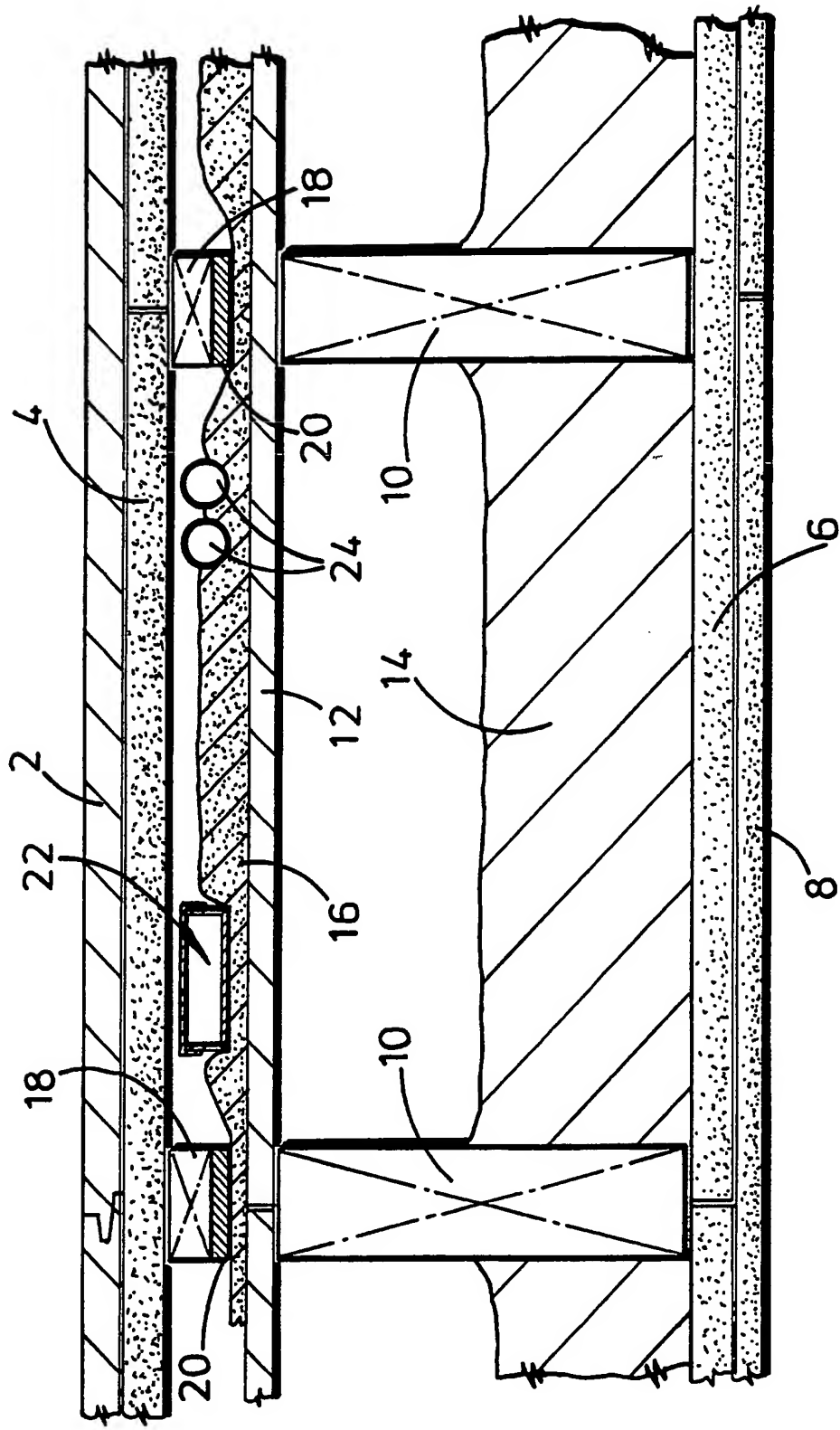
(57) A sound-insulating floor/ceiling construction for a building is provided by an assembly comprising a floor layer (2) of e.g. chipboard, with an optional sub-layer (4) of e.g. gypsum plasterboard. The ceiling layer comprises layers (6, 8) of similar sheet or planking material. The layers (6, 8) are secured to joists (10) laid in a predetermined pattern and which support a decking layer (12) of plywood or cement-bonded particle board. The layer (12), which may also include a sound-deadening quilt (16), is arranged to support a plurality of loose-laid bearer members (18) arranged in the same pattern as joists (10) of the assembly so that they lie congruently upon the joists (10). By "loose-laid" is meant that the bearers (18) are not secured to the decking layer (12, 16).



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print incorporates corrections made under Section 117(1) of the Patents Act 1977.

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FLOORING CONSTRUCTION

The invention is concerned with improvements in or relating to flooring construction. In particular, but not exclusively, the invention relates to the construction of flooring having good sound-insulation properties.

Regulations are in force from time to time requiring certain minimum levels of sound insulation to be provided in, for example, dwelling houses of differing construction, such as a so-called timber-framed construction, especially where the dwelling is for multiple occupancy. It is well known that sound is transmitted through floor/ceiling assemblies not only through air but also by impact and measures must be taken to minimise this sound transmission.

The present invention provides a flooring construction in a building, comprising a floor/ceiling assembly, said assembly having at least one upper layer providing a flooring basis for an upper storey of the building, at least one lower layer providing a ceiling surface for a lower storey, a plurality of joist members to an under surface of which said lower, ceiling, layer is secured, said joists being arranged in a predetermined pattern, an intermediate decking layer means having sound-absorbent properties positioned upon said joist members, a plurality of elongate bearer members positioned in a loose-laid manner upon the decking layer means in a pattern at least substantially

congruent with at least a major proportion of the plurality of joists, said bearer members supporting the upper, flooring, layer(s).

Advantageously, said upper layers may comprise planking of a gypsum plaster material on the top of which may be laid a layer of chip-board. The lower, ceiling, layer may comprise similar planking to the underside of which is secured a further layer of the same type of plaster board.

Conveniently the decking layer means comprises a layer of chipboard or multi-ply wood, and said sound-absorbent properties are provided by a heavy-duty, resilient sheet of quilted or densely felted fabric. The fabric may be in the region of 20 - 30mm in thickness. Alternatively, at least said decking layer means may comprise a layer of cement-bonded particle board having the required sound-absorbing characteristics. Additionally, the surface of the bearer members in contact with the sheet layer may be provided with heavy duty closed-cell foam rubber or synthetic rubber facings.

Conveniently, the heat insulation properties of the flooring construction may be enhanced by the provision of a thermally insulating layer or blanket of suitable conventional composition which may be laid upon the upper surface of the ceiling planking, below the intermediate decking layer.

There will now be described, with reference to the

drawing, an example of a flooring construction according to the invention. It will be understood that the description is given by way of example only and not by way of limitation.

The drawing is a diagrammatic cross-sectional view of a portion of flooring comprising a floor/ceiling assembly.

The drawing shows a floor/ceiling assembly, the floor portion of which comprises an upper layer 2 provided by chipboard sheet material below which is a sub-layer 4 of gypsum plasterboard planking. The ceiling portion of the assembly is comprised of two layers 6 and 8 of similar plasterboard planking or sheeting. These layers 6, 8 are secured to undersurfaces of a plurality of parallel laid joists 10.

Supported upon upper surfaces of the joists is a layer 12 of decking material, in the present example of ply-wood which, during the construction of the building, serves to increase the available footroom area for the operatives.

In the present example it will be observed that a quilt or blanket 14 of thermal insulation material is provided within the space between the layer 6 and the decking layer 12.

Resting upon the decking layer 12 is a 25mm layer of heavy duty, resilient, sound-insulating material 16 which in the present example is a paper-faced, mineral wool quilt, providing the necessary absorption of air-

transmitted sound. The quilt is strong and dense enough to support thereon a plurality of bearer members 18 which are laid in a parallel manner so that each member lies above and along a joist 10, spaced therefrom by the layers 12 and 16. In other examples not illustrated, the layers 12 and 16 may be replaced by a layer of cement-bonded wood particle board having the required sound-absorbing characteristics. Supported upon the bearer members 18 is the floor portion of the assembly comprising layer 2 and sub-layer 4 described above. Thus the layers 2 and 4 together with the members 18 are loose-laid upon the material layer 16. The lower surface of each bearer member 18 is provided with a facing 20 of a heavy duty, closed-cell foam plastics material.

Conveniently, there may be received within the space between the layer 16 and the floor portion sub-layer 4 a number of service lines, in the present example, cable trunking 22 and service pipes 24.

Various modifications may be made within the scope of the invention as defined in the following claims.

CLAIMS:

1. A floor/ceiling assembly in a building, said assembly having at least one upper layer providing a flooring basis for an upper storey of the building, at least one lower layer providing a ceiling surface for a lower storey, a plurality of joist members to an under surface of which said lower, ceiling, layer is secured, said joists being arranged in a predetermined pattern, an intermediate decking layer means having sound-absorbent properties positioned upon said joist members, a plurality of elongate bearer members positioned in a loose-laid manner upon the decking layer means in a pattern at least substantially congruent with at least a major proportion of the plurality of joists, said bearer members supporting the upper, flooring, layer(s).
2. An assembly as claimed in claim 1, wherein said upper layers comprise planking of board material selected from plasterboard and woodchip board.
3. As assembly as claimed in claim 2, wherein said lower layers comprise planking of board material selected from plaster board and woodchip board.
4. An assembly as claimed in any one of the preceding claims wherein the decking layer means comprises a layer of multi-ply wood.
5. An assembly as claimed in claim 4, wherein said decking layer further comprises a heavy-duty resilient sheet layer.
6. An assembly as claimed in claim 5, wherein the

sheet layer comprises quilted or densely felted fabric.

7. An assembly as claimed in any one of claims 1 to 3, wherein the decking layer means comprises cement-bonded particle board.

8. An assembly as claimed in claim 1 wherein at least two of said layers comprise cement-bonded particle board.

9. An assembly as claimed in either one of claims 6 and 7, wherein said particle board is wood particle board.

10. An assembly as claimed in any one of the preceding claims wherein the surface of each bearer member in contact with the decking layer means is provided with heavy-duty closed cell foamed rubber or synthetic rubber facings.

11. An assembly as claimed in any one of the preceding claims, wherein a thermally insulating blanket of material is provided upon an upper surface of the lower, ceiling, layer below the decking layer means.

12. A floor/ceiling assembly constructed and arranged substantially as hereinbefore described with reference to and as shown in the drawings.



**Relevant Technical Fields**

(i) UK Cl (Ed.M) E1D (DF116, DLEKH, DLEKJ, DLEKK, DLEKN)

(ii) Int Cl (Ed.5) E04B, E04F

**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

Search Examiner  
 D J LOVELL

Date of completion of Search  
 9 AUGUST 1994

Documents considered relevant following a search in respect of Claims :-  
 1-12

**Categories of documents**

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|---|---|
| <b>X:</b> Document indicating lack of novelty or of inventive step.   | <b>P:</b> Document published on or after the declared priority date but before the filing date of the present application.        |
| <b>Y:</b> Document indicating lack of inventive step if combined with one or more other documents of the same category. | <b>E:</b> Patent document published on or after, but with priority date earlier than, the filing date of the present application. |
| <b>A:</b> Document indicating technological background and/or state of the art.   | <b>&amp;:</b> Member of the same patent family; corresponding document.   |

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2219015 A (MACKENZIE)	1,10
X	GB 714263 (FINDLAY)	1,3
A	GB 237277 (STEVENS SOUND-PROOFING CO) note Figure 4	1
A	GB 132271 (STEVENS PARTITION etc) note Figures 3, 4	1
X	EP 0171691 A2 (GOSELE) note Figure 16	1

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).